March 25, 1998

ATTACHMENT NO. 1 "CWO 14-10 STATEMENT OF WORK"

A. GENERAL

The period of performance for this CWO 14-10 Supplement is as follows:

Phase 2 => 9/21/96 through 1/31/98
Phase 3 => 2/2/98 through 7/14/98

The effort is funded through 3/31/98

CWO Title: DSCC Telemetry Subsystem (DTM) Software

Background

The DTM software consists of two (2) software packages for the Telemetry Group Controller (TGC) and the Telemetry Channel Assembly (TCA). The software has been previously developed and is currently operating in the Deep Space Network. This CWO is for the contractor to modify this existing software. Three formal deliveries to the network are required as part of this CWO. These three deliveries are described in paragraphs B, C and D below.

Description of Work

All work on the DTM software shall be in accordance with JPL D-4000 standards. The contractor shall provide the design, coding, testing and documentation for the DTM software including:

1. TGC software: DOT-5464-OP
2. TCA software: DOT-5465-OP

The contractor shall provide:

1. Engineering, Pre-Acceptance Test and Acceptance Test versions of the software
2. Acceptance Test readiness review report
3. Source and object with D-4000 documentation
4. Software build procedures
5. Programmer's notes

The contractor shall support informal reviews such as:

1. Technical status and schedule issue with the CWO manager

2. Operability reviews
3. Test plan reviews
4. Interface document reviews
5. Plans for demo tests using engineering software

B. WORK TO BE PERFORMED - Delivery Phase 2

The contractor shall complete the delivery of the so-called "Phase 2" modifications to the TGC and TCA software. The modifications are as follows:

1. ECR 96.0041 - TGC Warm Start
2. ECR 96.0044 - Automatic Support Data Files
3. ECR 96.0054 - DTM Table Delivery
4. ECR 96.0050 - Prioritized Anomaly corrections as requested by JPL customer.

The contractor shall complete the documentation, pre-acceptance testing and the acceptance testing of the TGC and TCA software per the following schedule:

1.	Complete pre-acceptance testing	17 Dec 97
2.	Complete acceptance testing	30 Jan 98
3.	Documentation complete	30 Jan 98

ISDS STAFFING PROFILE:

Bo Cen - Full Time through 30 January, 1998
Hon Tran - Full Time through 30 January, 1998
Kathy Rundstrom - 0.2 through 30 January, 1998

ECR DESCRIPTIONS:

ECR 96.0041, TGC warm re-start capability will require modification of the TGC and TCA software. Currently, a TGC re-boot will disrupt on-going TCA activity, even if the TCA(s) are correctly processing telemetry data. Numerous situations have arisen where a TGC re-boot would have been advisable but was not performed due to its impact on the TCA data processing. The TGC software shall be modified to permit a TGC re-boot without interrupting data flow in any associated TCA(s). The TGC re-boot shall not disturb on-going TCA data processing and will assume its previous configuration in response to operator directive. The TGC shall request a status and performance parameter update from its TCA(s) in order to repopulate its status and performance database to reconstruct DTM displays and monitor data, or maintain a "check-file" or RAM image of its current configuration and status.

ECR 96.0050, DTM anomaly corrections, will require modifications to the TGC and TCA software. The modifications will be on a level of effort basis to correct outstanding DTM anomalies as prioritized by DSN operations and engineering staff. DSN operations and engineering teams, as well as JPL operations and system engineering, will be canvassed to produce a list of the most significant problems. This list will be used to guide the implementation effort.

ECR 96.0054, Implement capabilities within the DTM software to allow table updates from the NSS via the CMC. This capability will permit updates and/or new telemetry tables to be installed at the DTM without a software delivery. This capability will allow DSN Operations to add or modify, deliver and use tables, as needed, without interaction with the engineering organization. Capability to update the following tables form NSS is to be provided:

1. Spacecraft ID Table. This is a single table that maps the spacecraft number to the spacecraft initialization table.
2. Encapsulation Table. This table is used by the “890-201” protocol software to map “old style” (OPS 6-8) addresses into “new” addresses. Note that the capability to update the Spacecraft Initialization Tables (SIT) and the Spacecraft Format Tables from the NSS was implemented as part of delivery 1.

ECR 96.0054, Provide an automatic prediction selection capability into the DTM such that under nominal conditions manual selection or predictions will not be required. Selection algorithm would be the same at that used for Block V Receiver (BVR) prediction selection. The DTM manual prediction selection capability will remain.

C. WORK TO BE PERFORMED - Delivery Phase 3

The contractor shall complete the modifications required for the "Phase 2b" delivery of the TGC and TCA software.

The contractor shall complete the TGC and TCA code modification, documentation, pre-acceptance testing and acceptance testing. Key milestones are as follows:

1. Complete pre-acceptance testing 09 June1998
2. Complete acceptance testing 14 July 1998
3. Documentation complete 14 July 1998

This delivery 3 shall include the following changes/capabilities:

1. Upgrade the TGC and TCA to be Y2K Compliant
2. Add transport level accountability to the TCA.
3. Add virtual channel processing to the TCA
4. Add OPS 6-7 and OPS 6-8 capability to the TCA and TGC

ISDS STAFFING PROFILE:
Matthew Dailey - Full time from 2 February 1998 through 14 July1998
Ron Holden - 20% from 2 February 1998 through 14 July1998
Gary Oye – 10% Full Time from 15 October 1997 through 14 July1998
Kathy Rundstrom - 0.2 through 14 July 1998